LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Technical Appendices

CFA7 | Colne Valley

HRA screening for the South West London Waterbodies SPA (EC-009-002)

Ecology

November 2013

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Department for Transport

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A report prepared for High Speed Two (HS2) Limited.

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HS2 Phase 1

South West London Waterbodies SPA and Ramsar Site

HRA – Addendum

November 2012

This report was prepared in November 2012 and reflects the scheme as proposed at that time, including the possible link to Heathrow airport. As explained in the Environmental Statement the Government believes that the HS2 network should link to Heathrow and its preferred option is for this to be built as part of Phase Two. However, the Government has since taken the decision to pause work on the Heathrow link until after 2015 when it expects the Airports Commission to publish its final report on recommended options for maintaining the country's status as an international aviation hub.

This report is being presented as supporting information to the Environmental Statement, as it contains information pertinent to the assessment of effects in the Colne Valley, as discussed in Section 7, CFA7 report.

HS2 Phase 1

South West London Waterbodies SPA and Ramsar Site

HRA – Addendum

November 2012

CONTENTS

1. INTRODUCTION

1.1.1. This document is a supplementary report to the earlier Habitats Regulations Assessment (HRA) undertaken for the Phase 1 Appraisal of Sustainability (AoS) [1] (2011). The supplement covers a summary of the findings of overwinter bird surveys, measures to reduce construction disturbance, and potential in-combination impacts from the introduction of a proposed Heathrow spur and new station for Phase 2 of HS2.

2. CONTEXT

2.1.1. The South West London Waterbodies Special Protection Area (SPA) and Ramsar site (referred to henceforth as the SWLW European sites) is designated because it supports internationally important assemblages of wintering gadwall and shoveler. The high level HRA undertaken for the AoS of Phase 1 at the time identified that the nearest above-ground Phase 1 route options ran at distances of approximately 6.1 km (for route sections 808 and 813, which are no longer being considered) and 12 km (the HS2 preferred route option) from the SWLW European sites. While no direct impacts to the site itself were predicted, it was noted that supporting waterbodies, particularly the Mid Colne Valley Site of Special Scientific Interest (SSSI), may be affected. The findings of the initial high level HRA screening sheet included in the AoS were that the SSSI, which is crossed by the preferred route option, may provide supporting habitat for the birds of the SWLW European sites (due to the presence of a network of waterbodies between the two sites) but that further study would be required to confirm this.

2.1.2. The finding of the initial HRA for the SWLW European sites was that, due to the distance of the nearest route options, no likely significant effects on the sites were expected. A number of potential impacts on bird numbers at the Mid Colne Valley SSSI were described but it was not considered that any of these would have a significant effect on bird numbers at the SSSI in the medium or long term. While the SSSI is known to support significant numbers of gadwall, it is not known if these birds are part of the same population associated with the SWLW European sites.

2.1.3. Any impacts on the SSSI were considered unlikely to result in a significant adverse effect on the integrity of SWLW European sites, but this could not be ruled out as an issue due to the lack of available information on the numbers and movement of gadwall and shoveler in the Thames Valley area, and subsequently the importance of the SSSI for the birds of the SPA and Ramsar site. Therefore the report recommended that further survey work would be required to establish if the waterbodies in the SSSI provide important supporting habitat for the waterfowl of the SWLW European sites.

2.1.4. On review of the HRA findings, NE requested that further survey work was undertaken to address this issue and provide information to inform whether no likely significant effect on the SWLW European sites could be concluded. Consequently, wintering bird surveys were undertaken for lakes in the vicinity of the Mid Colne Valley HS2 crossing point in February and March 2012. The resulting survey report '*Colne Valley Gravel Pits: contribution to the assessment of the impact of HS2 LMW on the South West London Waterbodies SPA*' was published in June 2012 and submitted to NE for comment. The

[1] HS2 London to the West Midlands: Appraisal of Sustainability, Appendix 4 – Associated Assessment Reports, Appendix 4.1 Habitats Regulation Assessment.

findings of the surveys are summarised below in Section 1.3 and the full survey report is provided in Appendix 1.

2.1.5. The survey report has been reviewed by NE, who accept that the level of survey work is adequate for the HRA (letter dated 27th June 2012; provided in Appendix 2). NE also concluded that there would be no likely significant impacts from the proposals during the operation of the preferred route option but requested that further information on the options for mitigating the impact of disturbance during construction be provided to enable a conclusion of no likely significant effect to be drawn. Accordingly, this report sets out a summary of the findings of the survey report in Section 1.3 and relevant impact avoidance measures in Section 1.4.

3. FINDINGS OF SURVEYS

3.1.1. The proposed HS2 route crosses the south-western corner of the Mid-Colne Valley SSSI, which is composed of a series of flooded gravel pits and associated habitats. These gravel pits are part of a larger complex of pits in the Colne Valley which are important for wildfowl.

3.1.2. Wintering bird surveys were undertaken in February and March 2012 at the lakes that would be affected by the HS2 crossing and on nearby lakes that are likely to provide refuge to birds when they are disturbed. The survey findings were put into context by reference to a detailed study of birds which was undertaken over a year in the wider Colne Valley Lakes complex (White and Harris, 2008)[1], and recent Wetland Bird Survey annual reports[2]. Two visits were undertaken in February and one in March, during which all waterfowl and gulls were counted on each of seven lakes. Five of these lakes are part of the SSSI (Korda Lake, Long Lake, Harefield Moor Lake, Broadwater Lake and Tilehouse Lake South) and two are immediately adjacent to the SSSI (Savay Lake and Harefield No. 2 Lake).

3.1.3. The surveys recorded very low numbers of gadwall and shoveler on each lake except Broadwater. There were no more than two of each species recorded on any of the other lakes except for Tilehouse Lake South (max of six gadwall and three shoveler). No gadwall were seen at Broadwater Lake but there were higher numbers of shoveler, with a maximum 41 shoveler). The survey findings are summarised in Table 3-1.

[1]White, G.J. and Harris, A. 2008 The wetland resource of the Colne Valley: an assessment of its importance to nature conservation, with special reference to waterbirds.

[2]Holt, C.A., Austin, G.E., Calbrade, N.A., Mellan, H.J., Mitchell, C., Stroud, D.A., Wotton, S.R. & Musgrove, A.J. 2011. Waterbirds in the UK 2009/10: The Wetland Bird Survey. BTO/RSPB/JNCC, Thetford.

Table 3-1 Numbers of Gadwall, Shoveler and Total Waterfowl Observed on each Lake

Lake (lakes that form part of the SSSI are shown in bold)	Distance at nearest point from HS2	Survey visit	Gadwall	Shoveler	All waterfowl
Savay Lake	Crossed by route	1	2	0	112
		2	0	0	105
		3	0	0	91
Harefield No. 2 Lake	Crossed by route	1	0	0	93
		2	2	3	161
		3	0	0	136
Korda Lake	Crossed by route	1	0	0	66
		2	0	0	45
		3	0	0	39
Long Lake	Immediately adjacent to the route	1	0	0	5
		2	0	0	6
		3	0	0	5
Harefield Moor Lake	Approximately 35m	1	0	1	58
		2	0	0	61
		3	1	0	64
Broadwater Lake	Approximately 70m	1	0	41	293
		2	0	19	273
		3	0	17	391
Tilehouse Lake South	Approximately 35m	1	6	3	42
		2	2	3	51
		3	3	0	70

3.1.4. Within the SSSI, the proposed route would cross Korda Lake on a viaduct, run along the west side of Long Lake and run close to the western margin of Tilehouse Lake South. To the south of the SSSI, the proposed route would also cross Savay Lake and Harefield No. 2 Lake. No gadwall or shoveler were recorded on Korda Lake or Long Lake, and the maximum numbers recorded at Tilehouse Lake South were six gadwall and three shoveler. Outside the SSSI, the maximum numbers recorded were two gadwall and no shoveler on Savay Lake and two gadwall and three shoveler on Harefield No. 2 Lake. The highest numbers of shoveler (maximum of 41) were recorded on Broadwater Lake, which lies approximately 70 m to the north-east of the proposed route at its nearest point. However, the areas of the lake where shoveler were observed were at least 300 m from the proposed route, as the birds favoured the centre of the lake and a sheltered area with small islands to the south during windy conditions.

3.1.5. The results were compared with numbers observed during the year-long survey undertaken by White and Harris (2008). The comparison showed that the numbers of waterfowl recorded were broadly similar to numbers recorded in the same period in 2007 and therefore that the survey results recorded were representative for the site. White and Harris found that Broadwater Lake and Stockers Lake (2.5 km north-east of the current scheme so not considered in this survey) were the lakes of highest importance for all waterfowl species in the area.

3.1.6. During the survey, activities that caused disturbance to waterfowl were noted. Localised disturbance, such as the presence of anglers or the strimming of vegetation, caused some bird movements. The most significant levels of activity which may cause disturbance were noted at Broadwater Lake (the most important lake for waterfowl in the study area) which was regularly overflown by light aircraft and helicopters landing at a nearby airfield. However resident flocks of shoveler did not react to this disturbance and appeared to be habituated to the disturbance; conversely, transient flocks of lapwings

were seen to be disturbed by the same aircraft movement, which suggested that the waterfowl that regularly use Broadwater Lake habituate to the existing high levels of disturbance.

3.1.7. The suitability of each lake to support gadwall and shoveler was assessed by comparing the physical characteristics of each lake to the ecological requirements of the waterfowl, as well as taking into consideration the results of the 2012 survey and work of White and Harris (2008). Broadwater Lake was assessed as being highly suitable for gadwall and shoveler due to its size and topography which provided varied areas for feeding, shelter and refuge for waterfowl. However, the other lakes (which are crossed, or are adjacent to the proposed HS2 route) were assessed as having low, very low, or no potential for gadwall and shoveler because of the absence of these suitable features.

3.1.8. As all the lakes that would be directly affected by the proposed route are considered to have low, or very low, suitability for gadwall and shoveler, and very low numbers of the two bird species were recorded during the survey, the impact of construction and operation of the railway on these species within the Colne Valley Lakes complex is assessed as minor. The two main lakes for these species are Stockers Lake (sufficiently distant that it will not be affected) and Broadwater Lake which is approximately 70 m from the railway at its nearest point. Broadwater Lake is a large lake with a complex topography, which has been shown to be able to support large numbers of wildfowl in spite of high existing levels of disturbance.

4. IMPACT AVOIDANCE MEASURES FOR PHASE 1

4.1.1. Appendix 4.1 of the Phase 1 AoS Report considered the various impacts that HS2 could have on the SWLW European sites and the associated Colne Valley Lakes. NE agreed with the conclusion that there would be no likely significant effects on the SWLW European sites during operation.

4.1.2. Although the waterbodies that will be directly affected by the proposed route only support low numbers of wildfowl, the potential exists for erratic, variable and high level disturbance impacts during construction for Phase 1. In particular, noise and visual disturbance are likely to be greater during construction than during operation, with the potential to result in a likely significant effect on the qualifying interest features of the SWLW European sites without the implementation of measure to reduce or avoid the impact. Therefore the following section sets out the measures which would be incorporated into the construction of the scheme to avoid these potential effects.

4.1.3. There are currently a number of design and construction options being considered for the HS2 Phase 1 route across the Mid-Colne Valley lakes. All of the options would be on viaduct over the lakes, but construction approaches may differ depending on the final design chosen. All of the approaches however would involve the same activities, increased movement, increased lighting, and increased noise from construction and piling.

4.1.4. A number of established measures to reduce disturbance impacts from the construction activities would be embedded in the construction approaches, and these are set out below.

- At ground level, hoarding will be erected to reduce noise and visual disturbance.
- During piling, a soft start procedure will be adopted to avoid sudden onset of loud piling noise.

- Access routes and laydown areas will be sited away from the SSSI to reduce disturbance impacts.
- Human movements outside of screened areas will be avoided where possible to reduce disturbance.
- The site lighting scheme will be designed to minimise disturbance.
- Standard daytime working hours will be adhered to (ie no 24 hour working) which will reduce nocturnal disturbance, unless otherwise agreed in advance in exceptional circumstances.

4.1.5. The detailed designs that set out how each of the above measures will be implemented for the chosen construction approach will be developed and agreed in consultation with NE. Whichever construction approach is adopted, the established measures outlined above would help reduce the level of disturbance. As a result, lower levels of disturbance would occur, and the rest of the Mid-Colne Valley SSSI would absorb any minor displacement of birds from affected waterbodies. As a result, there are not predicted to be any likely significant effects to the SPA gadwall and shoveler populations during construction.

4.1.6. In relation to general route construction, all construction works within the catchment of the Mid-Colne Valley Lakes SSSI would be carried out in accordance with best-practice techniques to ensure that the quality of the water which enters the waterbodies would not be compromised in any way that could have an adverse impact on the ability of the SSSI to support the gadwall and shoveler populations.

5. IN-COMBINATION EFFECTS

5.1.1. The potential exists for in-combination effects to occur between HS2 Phase 1 and the proposed HS2 Phase 2 Heathrow spur and station, where the proposed route options for both schemes could affect the SWLW European sites. No likely significant effects to the supporting habitats of the SPA qualifying interest features are predicted for HS2 Phase 1, and therefore it is only disturbance impacts which have the potential to act in-combination. As outlined above, following the implementation of measures to avoid disturbance impacts during construction, Phase 1 is not predicted to have a likely significant effect on SPA qualifying interest features populations of gadwall and shoveler in isolation.

5.1.2. Construction of HS2 Phase 1 would occur between 2017 and 2026, with works in the Mid-Colne Valley SSSI lasting some 2.5 – 3 years during this period. These works could cause low levels of disturbance to over-wintering birds using the lakes in the SSSI. These waterbodies are outside the SPA, but could provide supporting habitat to the designated site, given their evident use by over-wintering gadwall and shoveler, the species for which the SPA is principally designated. However, with the implementation of the mitigation measures outlined above, the level of disturbance would be too low to result in displacement of birds from the SSSI lakes.

5.1.3. Phase 2 of the scheme would involve construction of the HS2 Heathrow spur and station, including works close to the Phase 1 viaduct in the Mid Colne Valley. The Phase 2 spur would require the construction of cuttings to take the proposed spur junctions from Phase 1 towards Heathrow into tunnels approximately 150m from Tilehouse Lake South and 100m from Tilehouse Lake North (for the north facing spur) and approximately 300m from Harefield No. 2 Lake (for the south facing spur).

5.1.4. Harefield No. 2 Lake is considered to be far enough away that no disturbance impacts are likely to occur from construction activity for the Phase 2 works. However Tilehouse Lake North and Tilehouse Lake South would experience a longer period of low level construction noise from the Phase 2 works.

5.1.5. Phase 2 construction would commence in or around 2027[1]. Construction impacts would not overlap with Phase 1 works, but could lengthen the period of low level disturbance from the two schemes together. However, extensive alternative habitat within the rest of the Mid-Colne Valley SSSI would absorb any minor displacement of birds from these waterbodies, and no in-combination impacts are predicted. Moreover, similar mitigation techniques, as proposed for Phase 1, would minimise the risk of disturbance from Phase 2 works.

5.1.6. It is expected that birds would rapidly habituate to the operational activity of HS2 Phase 1 and return to any areas from which they had been displaced during construction. Therefore no in-combination impacts between the operational phase of HS2 Phase 1 and construction impacts from HS2 Phase 2 Heathrow spur are predicted to occur.

6. CONCLUSIONS

6.1.1. This supplementary report has provided a summary of the results of additional bird surveys of the Mid-Colne Valley SSSI undertaken during February-March 2012, as well as existing published survey results. This information has been considered in relation to the importance of the SSSI in supporting qualifying interest features species of the SWLW European sites, gadwall and shoveler. The survey results and published data show that the SSSI does support numbers of both gadwall and shoveler, but that the lakes which support the majority of birds will not be affected by HS2 Phase 1.

6.1.2. The report also presents measures that will be followed in order to reduce disturbance impacts during construction, therefore ensuring that there will be no likely significant effect from construction on the low numbers of birds using the lakes. It has already been established that there would be no likely significant effects from disturbance during operation, or from any other source of impact during construction or operation.

6.1.3. An HRA screening of the HS2 Phase 2 proposals for a Heathrow spur and new station has also been carried out. It has concluded that Phase 2 will have no significant in-combination effects on the Mid-Colne Valley SSSI supporting qualifying interest feature species of the SWLW SPA. This is covered in a separate report.

6.1.4. A consideration of likely in-combination effects with the proposed HS2 Heathrow spur has been presented, with the conclusion that there will be no in-combination likely significant effect to the SWLW European sites.

[1]HS2 London to West Midlands EIA Scope and Methodology Report. Condition A - Final 03 September 2012.

APPENDIX 1
Colne Valley Gravel Pits: Contribution to the assessment of the impact of HS2 LMW on the South West London Waterbodies SPA

High Speed Two

Colne Valley Gravel Pits: contribution to the assessment of the impact of HS2 LMW on the South West London Waterbodies SPA

June 2012

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Contents

Summary

The proposed route of HS2 crosses the Colne Valley lakes, a series of flooded gravel workings to the west of London which are important for waterfowl. Although the HS2 crossing of the Colne Valley is 12km north of the South West London Waterbodies Special Protection Area (SPA) and Ramsar site, the AoS Habitats Regulations Assessment screening report for the site was unable to conclude no likely significant effect on the SPA, and Natural England advised that further work would be required before it could be concluded that an Appropriate Assessment was not necessary.

In February and March 2012, wintering bird surveys were undertaken for lakes in the vicinity of the Colne Valley HS2 crossing to provide baseline information from which to undertake an assessment of the impact on waterfowl. Existing information on waterfowl use of the lakes was also reviewed.

The key waterfowl species relevant to the Habitats Regulations Assessment are gadwall and shoveler, which are the two species for which the South West London Waterbodies Special Protection Area (SPA) and Ramsar site are designated. Surveys and data review concluded that the lakes directly affected by land-take by HS2 were of low or very low importance for these two species. However, Broadwater Lake, which is 100m from the proposed HS2 line at its nearest, is important for both species.

Observations made both during this and a previous study indicated that waterfowl using Broadwater Lake habituate to the existing high levels of disturbance.

Overall, it is concluded that the impact of construction and operation of HS2 would have negligible impact on gadwall and shoveler in the Colne Valley lakes, and therefore there is no likely significant effect on the SW London Waterbodies SPA/Ramsar site.

1. Introduction

Although the proposed route of HS2 is 12km to the north of the South West London Waterbodies Special Protection Area (SPA) and Ramsar site (figure 1), the AoS Habitats Regulations Assessment screening report for the site was unable to conclude no likely significant effect on the SPA, and identified the need for further work[1]. The uncertainty was based on the potential impact on the SPA qualifying bird species at the Mid-Colne Valley Site of Special Scientific Interest (SSSI), which would be directly affected by HS2. In its response to the AoS consultation, Natural England advised that further work would be required before it could be confirmed that an Appropriate Assessment would not be required.

When the South West London Waterbodies SPA/Ramsar site were confirmed they qualified by supporting internationally important populations of both gadwall *Anas strepera* and shoveler *Anas clypeata* in winter. When the SPA was classified in 2000, the site had five-year mean annual maxima of 786 gadwall and 1,075 shoveler. However, when the Ramsar site information sheet was revised in 2008, the five-year mean annual maxima had declined to 487 gadwall and 397 shoveler.

Along with other waterfowl, gadwall and shoveler move between waterbodies in response to suitable feeding and roosting opportunities and varying levels of disturbance. There is likely to be at least some interchange between birds wintering within the SPA and the Mid-Colne Valley SSSI. The concern is heightened by the fact that waterfowl numbers in the SPA/Ramsar site have declined significantly in recent years. The issue is therefore whether the HS2 crossing of the Mid-Colne Valley SSSI may significantly affect those species at that site, and if so, whether this could result in an effect on the integrity of the SPA/Ramsar site.

A study of waterfowl in the SW London Waterbodies SPA and adjacent wetlands undertaken by Brian Briggs at the Edward Grey Institute at Oxford University[2] indicated that the decline in the number of gadwall in the SPA was largely the result of birds redistributing to other waterbodies in the wider Thames region. On the other hand, it was concluded that the SW London area appears to hold a largely self-sustaining population of wintering shoveler with little indication of exchange with other waterbodies in the region.
The proposed HS2 route (figure 2) crosses the south-western corner of the Mid-Colne Valley Site of Special Scientific Interest (SSSI), which is a series of flooded gravel pits and associated habitats. The gravel pits within the SSSI

[1] HS2 London to the West Midlands: Appraisal of Sustainability, Appendix 4 – Associated Assessment Reports, paragraph 4.12.3
[2] The Environment Bank 2007 South West London Waterbodies Study: Implications for Planning and Nature Conservation. Executive summary of the Final results of the South West London Waterbodies Study (Brian Briggs)

are part of a larger complex of pits in the Colne Valley, which extend south from Rickmansworth to the A40.

HS2 would cross the small, southernmost pit in the SSSI (Korda Lake) on a viaduct, and the railway would also run along the west side of the smaller pit immediately to the north (known in this report as Long Lake), and close to the western margin of Tilehouse Lake South. In its response to the AoS consultation, the RSPB raised concerns that the crossing of Korda Lake could significantly affect its capacity to support breeding and wintering water bird populations in the SSSI.

To the south of the SSSI, HS2 would also cross two additional lakes, Savay Lake and Harefield No. 2 Lake, both of which also support breeding and wintering bird populations.

In order to investigate the potential impact of HS2 on wintering birds in the SSSI, wildfowl counts were undertaken in February and March 2012 on the lakes that would be affected and on the lakes nearby that are likely to offer a refuge to birds when they are disturbed. To provide context to the survey results, extensive reference has also been made to a detailed study of birds in the wider Colne Valley Lakes complex[3], and to recent Wetland Bird Survey annual reports.

2. Rational for this report

Populations of wintering waterfowl on inland waterbodies are generally at their peak between December and March. Numbers occurring at a given site vary according to the prevailing conditions at the site itself (especially in relation to weather and disturbance), but also in relation to conditions at alternative wintering sites. For example, freezing weather on the continent may force large numbers of waterfowl to move to relatively warm locations such as the London area, and significant disturbance (e.g. shooting or sailing) can cause large-scale movements of birds between waterbodies within a region.

The original intention was to undertake surveys throughout the period December-March. In the event, however, access was only obtained for surveys in February and March. Surveys were designed to identify the relative importance of different lakes within the vicinity of the proposed HS2 route, but also to provide information on existing levels of disturbance and movements between lakes.

[3] White, G.J. and Harris, A. 2008 The wetland resource of the Colne Valley: an assessment of its importance to nature conservation, with special reference to waterbirds.

3. Survey methods

Two visits were undertaken in February and one in March, during which all waterfowl were counted on each of seven lakes. All visits were undertaken during the week, when disturbance was expected to be at a minimum. Two visits included dusk, when waterfowl often move from safe resting areas to feeding areas. This was to gain some insight into diurnal movements between lakes, as well as changes in distribution patterns within individual lakes.

The seven pits where waterfowl were counted were as follows (see figure 2 for location of pits):

1. Savay lake
2. Harefield No. 2 Lake
3. Korda Lake
4. Long Lake
5. Harefield Moor Lake
6. Broadwater
7. Tilehouse Lake South

All waterfowl and gulls were counted to provide a complete record of wintering species and numbers. Presence of woodland bird species was also noted.

Any events causing significant disturbance within the site, and the effect on the relevant waterfowl species, were recorded and described.

Weather conditions were described in general terms, including weather in the week preceding the visit, which may affect bird numbers.

4. Survey results

The numbers of all waterfowl and gulls that were recorded on the various lakes during the three survey dates are shown in Appendix 1. The numbers of gadwall and shoveler, and the total number of waterfowl on each lake are shown in tables 1-3.

Table 1. Numbers of gadwall, shoveler and total waterfowl observed on each lake in late winter 2012 (lakes 1-3)

Lake number/ name	1 Savay Lake			2 Harefield No. 2 Lake			3 Korda Lake		
date	16.2	28.2	7.3	16.2	28.2	7.3	16.2	28.2	7.3
Gadwall	2	0	0	0	2	0	0	0	0
Shoveler	0	0	0	0	3	0	0	0	0
All waterfowl	112	105	91	93	161	136	66	45	39

Table 2. Numbers of gadwall, shoveler and total waterfowl observed on each lake in late winter 2012 (lakes 4-6)

Lake number/ name	4 Long Lake			5 Harefield Moor Lake			6 Broadwater Lake		
date	16.2	28.2	7.3	16.2	28.2	7.3	16.2	28.2	7.3
Gadwall	0	0	0	0	0	1	0	0	0
Shoveler	0	0	0	1	0	0	41	19	17
All waterfowl	5	6	5	58	61	64	293	273	391

Table 3. Numbers of gadwall, shoveler and total waterfowl observed on each lake in late winter 2012 (lake 7)

Lake number/ name	7 Tilehouse South		
date	16.2	28.2	7.3
Gadwall	6	2	3
Shoveler	3	3	0
All waterfowl	42	51	70

The tables above show that no more than two gadwall or shoveler were recorded on any of the lakes except Broadwater and Tilehouse Lake South.

Counts of shoveler at Broadwater were between 17 and 41. Observations showed that during the survey period they were resting during the day in sheltered and undisturbed areas in the south and east of the lake, and feeding in the centre of the lake at dusk.

Tilehouse Lake South was the only lake to hold gadwall on all three visits (maximum 8).

5. Shoveler and gadwall distribution in relation to proposed HS2 route alignment

Numbers of shoveler and gadwall recorded on the lakes that would be crossed by or are immediately adjacent to the proposed line of HS2 are low. Within the SSSI, no gadwall or shoveler were recorded on Korda Lake or Long Lake, and the maxima at Tilehouse South were 6 gadwall and 3 shoveler. To the south of the SSSI, the maxima were 2 gadwall and no shoveler on Savay Lake, and 2 gadwall and 3 shoveler on Harefield No 2 Lake.

However, there were higher numbers of shoveler on Broadwater Lake, the nearest margin of which is about 100m to the north-east of proposed route. The areas of the lake where shoveler were observed feeding and resting were at least 300m from the proposed route. They favoured the centre of the lake and, during windy conditions on 7th March, the area around the small islands in the south of the lake where there was some shelter.

6. Existing levels of disturbance

During the three visits, any activities that caused disturbance to waterfowl on the seven lakes were recorded. It should be noted that all surveys were undertaken during the week, when levels of disturbance were minimal. Also, there was no water-skiing or other boat activity during any of the visits.

Broadwater Lake

The most significant levels of activity with potential to cause disturbance were noted at Broadwater Lake (the most important lake for waterfowl in the study area), which was regularly over-flown by light aircraft and helicopters landing at a nearby airfield. On 16th February, it was noted that shoveler feeding intensively in centre of lake at 17.00 took no notice of low-flying light planes frequently passing directly overhead. However, a flock of Lapwings resting on the east bank of the lake were repeatedly disturbed by the same low-flying planes. This is considered to an example of local birds habituating to a particular type of disturbance, since the shoveler were clearly wintering in the area, whereas the Lapwings were only seen on this one occasion and were evidently transient.

On 28th February, a helicopter circled fairly low over the lake during the count, but this had no noticeable effect on any of the waterfowl on the lake.

During the early part of the visit on 7th March the weather conditions were poor, with low cloud and heavy squally rain. As a result, there were no low aircraft overflying the lake during the count period. However, there were two men strimming the bank-side vegetation on the east shore, and these had a very local effect on bird distribution. A few coot and tufted ducks were observed moving away from the area affected. When the observer walked up the west side of the lake about 50 tufted ducks flushed to the northern end. Other birds were unaffected.

Harefield Moor Lake

On 16th February, a flock of Lapwings was disturbed by low-flying aircraft, in the same way as was observed at Broadwater Lake. On 7th March there were several fishermen at intervals around the lake, but this did not appear to affect

waterfowl distribution. However, White and Harris noted that anglers caused more disturbance when water levels are low (presumably in summer), when they fished from muddy peninsulas and islands.

Tilehouse South

On 28th February a helicopter overhead caused no disturbance. On 7th March both helicopter and light aircraft flying low overhead also caused no disturbance. However, a man walking into the woodland immediately to the south of the lake caused about 10 tufted ducks to move to the northern end.

The lake is used for water-skiing, although according to White and Harris, this activity is confined to the summer.

Other lakes

No particular disturbance issues were noted at the other lakes during the surveys. However, White and Harris noted than intense angling activity resulted in most waterfowl leaving Savay Lake and Korda Lake. In this context, it should also be noted that Harefield No. 2 Lake houses a major water sports club.

7. Representativeness of the 2012 data

Bird surveys could only be undertaken in February and March, hence the survey may or may not provide representative counts. This issue is compounded by the fact that there was a period of intense cold in early February, during which some of the lakes may have been completely frozen, and it is possible that a significant dispersal to other waterbodies may have taken place.

In order to understand whether the numbers recorded in early 2012 were representative, they were compared with numbers observed during the year-long survey undertaken by White and Harris (2008), and more generally with numbers reported over the last 25 years, which were reviewed in the same document. Numbers of shoveler and gadwall and total numbers of waterfowl recorded on the various lakes in the present study and the White and Harris study are compared in tables 4-6.

Table 4. Comparison on gadwall, shoveler and total waterfowl numbers at lakes 1-3 in 2006/07 survey and in 2012

Lake number/ Name	1 Savay Lake			2 Harefield No. 2 Lake			3 Korda Lake		
Year	2006/7		2012	2006/7		2012	2006/7[4]		2012
	max	Feb-Mar max	max	max	Feb-Mar max	max	max	Feb-Mar max	max
Gadwall	2	0	2	0	0	2	-	-	0
Shoveler	16	2	0	0	0	3	-	-	0
All wildfowl	395	161	112	105	81	161	-	-	66

Table 5. Gadwall, shoveler and total waterfowl numbers at lakes 4-6 in 2006/07 survey and in 2012

Lake number	4 Long Lake			5 Harefield Moor Lake			6 Broadwater Lake		
Year	2006/7[5]		2012	2006/7[6]		2012	2006/7[7]		2012
	max	Feb-Mar max	max	max	Feb-Mar max	max	max	Feb-Mar max	max
Gadwall	-	-	0	-	-	1	42	18	0
Shoveler	-	-	0	-	-	1	92	28	41
All wildfowl	-	-	0	-	-	64	1160	663	391

Table 6. Gadwall, shoveler and total waterfowl numbers at lake 7 in 2006/07 survey and in 2012

Lake number	7 Tilehouse South		
year	2006/7[8]		2012
	max	Feb-Mar max	max
Gadwall	12	0	6
Shoveler	4	0	3
All wildfowl	226	207	70

The comparison shows that the numbers of waterfowl (and numbers of gadwall and shoveler) at Savay and Harefield No. 2 Lakes in February-March 2012 was similar to numbers in the same period in 2007. For Korda Lake, Long Lake and Harefield Moor Lake, no comparison between 2007 and 2012

[4] The 2008 report does not give separate figures for Korda Lake
[5] The 2008 report does not give separate figures for Long Lake
[6] In the 2008 report, this lake is included in the count for the Broadwater complex
[7] The totals in the 2008 report combine lakes 6,5 and perhaps also 3
[8] The 2008 report includes counts for the North Tilehouse Lake as well as lake no 7

is possible as numbers for these lakes were not identified separately for 2007. It appears that the counts for these lakes and perhaps at least one other lake were included in the Broadwater 'complex'. This explains why the maximum 2012 waterfowl count for Broadwater Lake was lower than the February-March 2007 count. Total numbers for Tilehouse South in 2012 were lower than the 2007 count for Tilehouse, but this included Tilehouse North, to which no access was obtained for the 2012 count.

In conclusion, the total numbers of waterfowl present in February-March 2012 were broadly similar to numbers in the same period in 2007. It should, however, be noted that waterfowl numbers for the lakes is generally higher in autumn and early winter.

8. Potential of lakes in vicinity of HS2 for waterfowl

The potential of the lakes in the vicinity of the proposed HS2 route for different waterfowl can also be assessed from their physical characteristics and ecological requirements of waterfowl species.

Gadwall feed primarily on aquatic vegetation, obtained mainly in open water, either by eating floating vegetation or by upending to reach submerged plants up to 30cm from the surface. The shoveler is specially adapted to sieve aquatic plankton from the surface of the water (or mud), or from just below the surface. They take a range of small aquatic invertebrates as well as floating seeds and plant debris. [9] [10]

Although the two species have quite different food requirements, they often occur in similar wetlands, since the main requirement is lakes that are highly ecologically productive and have significant plant and animal growth at or very near the surface. As with most other waterfowl, they also require access to lakes that are large enough to act as effective refuges when other lakes are disturbed.

Of the seven lakes included in this study, waterfowl counts and observations indicate that most are either too deep to support gadwall and shoveler in any numbers, or are too small and enclosed. The potential for the lakes to support these species is discussed for each lake below.

[9] Owen, M. 1977 Wildfowl of Europe. The Wildfowl Trust. Macmillan

[10] Cramp, S and Simmons KEL 1977 Handbook of the Birds of Europem the Middle East, and North Africa: the birds of the Western Palearctic. Vol.1: Ostrich to Ducks.

1. Savay Lake

Although quite a large lake, it is dissected by numerous islands and peninsulas, forming rather narrow areas of water. This means that it is relatively sensitive to disturbance from anglers. White and Harris noted that it is primarily of importance for diving duck although surface feeders do sometimes occur. Although small numbers of shoveler and a few gadwall do sometimes occur, the potential of the site to support these birds is assessed as low.

2. Harefield No. 2 Lake

This is a large oblong lake with no islands, and is apparently uniformly deep. Relatively small numbers of diving duck use the lake (White and Harris). Only very small numbers of gadwall and shoveler have been recorded using this lake, and its potential to support these species appears to be very low.

3. Korda Lake

White and Harris described this as a small, deep lake that generally supports only low numbers of diving duck when it is not heavily disturbed by anglers. The counts undertaken during the present study support this conclusion, and the suitability of the lake for gadwall and shoveler is assessed as very low.

4. Long Lake

This narrow lake has margins heavily overgrown with trees and supports very few waterbirds. It is assessed as not suitable for gadwall and shoveler.

5. Harefield Moor Lake

White and Harris identified this lake as supporting mainly diving ducks and grebes. During the present survey only single gadwall and shoveler were observed, and the lake is assessed as having low potential for these species.

6. Broadwater Lake

Broadwater is a very large lake (80 ha) with complex topography and numerous islands. White and Harris identified it as one of the two most important waterbird refuges in the Colne Valley lakes complex. It is important for shoveler, and also forms an important feeding area for gadwall when aquatic weeds are abundant. Although the northern half of the lake is used by the sailing club, the lake is large enough to have refuge areas, and thereby to support waterfowl even when there are high levels of disturbance. The lake is assessed as having high importance for both gadwall and shoveler, on the

basis that it regularly holds a high proportion of the species in the Colne Valley gravel pit complex..

7. Tilehouse South

White and Harris describe Tilehouse South as being deep, but with a series of small wooded islands on the eastern margin to provide a refuge for waterfowl when the lake is being used for water-skiing. Although the lake was attractive to both gadwall and shoveler in the past, numbers of both birds have been low in recent years. Small numbers of both species were seen during the present study. The potential of this lake for gadwall and shoveler is now assessed as low.

9. The significance of Colne Valley lakes in the vicinity of the proposed HS2 route in relation to the South West London Waterbodies Special Protection Area (SPA) and Ramsar site

As noted in section 1, the South West London Waterbodies Special Protection Area (SPA) and Ramsar site are classified on account of their wintering populations of gadwall and shoveler. Consideration of the potential impact of HS2 on the SPA/Ramsar site needs therefore to be undertaken in relation to impact on these two species.

The analysis undertaken by White and Harris confirmed that the Colne Valley lakes as a whole were of national importance for a number of waterfowl in the period 1987/88 to 2006/07. These included both shoveler and gadwall. Peak counts for both species also exceeded the national importance thresholds during the 2006/07 survey period. However, numbers have declined in recent years, and based on the standard five year mean of peak counts, the WeBS report for 2010 confirms that the Colne Valley is no longer nationally important for either species, although the threshold for national importance was exceeded for shoveler in 2009/10.

White and Harris concluded that, within the Colne Valley complex, Stockers Lake and Broadwater stand out as the lakes of high importance for waterfowl. Between them, they support most of the gadwall and shoveler in the complex. Stocker's Lake was not included in the present study as it is 2.5 km north-east of the proposed HS2 route. However, Broadwater Lake is just 100m from the proposed HS2 route at its nearest point.

Broadwater Lake supported good numbers of shoveler during this study (up to 41) and a maximum of 92 were noted during the White and Harris study. Although no gadwall were observed at Broadwater during the present study, a maximum of 42 were observed during the White and Harris study. However, observations carried out both during the present study and the White and

Harris Study confirm that Broadwater is large enough, and has sufficient topographic complexity to absorb substantial amounts of disturbance. Specifically, waterfowl using the lake have been shown to habituate to regular low flying aircraft, and to be able to accommodate sailing activity in the northern half of the lake. In view of the size and complexity of the lake, and the fact that HS2 would be no nearer than 100m to the south-west tip of the lake, it is concluded that it would not affect gadwall and shoveler using the lake.

All other lakes within the study area have been shown to support only very small numbers of gadwall and shoveler, and are assessed as having low or very low suitability for these species. From east to west, the railway would pass on viaduct over Harefield No. 2 Lake, Savay Lake, and Korda Lake, then pass close to Long Lake and Tilehouse South. Harefield No. 2 Lake, Korda Lake and Long Lake are assessed as having very low suitability for both gadwall and shoveler. Any effect on these two species would therefore be limited to Savay Lake and Tilehouse South, both of which sometimes support small numbers of the two species.

At Savay Lake, the railway would cross in the north-east corner, and would therefore have less impact on the main area of the lake to the south. Hence, once the railway has been constructed, small numbers of gadwall and shoveler could still use the lake. At Tilehouse South, the railway would be adjacent to the west bank, and would not affect the refuge area of wooded islands on the eastern margin of the lake. Again, it is considered that small numbers of gadwall and shoveler could still use the lake.

10. Impact of HS2 on gadwall and shoveler

In view of the fact that all the lakes that would be directly affected are considered to be of low or very low suitability for gadwall and shoveler, the impact of construction and operation of the railway on the two species within the Colne Valley Lakes complex is assessed as low. The two main lakes for these species within the complex are Stockers Lake and Broadwater Lake. Stockers Lake is too far away to be affected (2.5 km), and although Broadwater Lake is nearer (100m at nearest point), it is a large lake with complex topography that has been shown to be able to support large numbers of waterfowl in spite of high existing levels of disturbance. All other lakes that would be affected are of low or very low importance for gadwall and shoveler.

Observations both during this survey and the White and Harris study indicate that people walking and fishing on the margins of the lakes cause significant disturbance, whereas waterfowl have habituated to low flying aircraft, and are able to seek refuge from boating activity by moving to undisturbed areas. On this basis, tt is concluded that construction and operation of HS2 may result in

redistribution of the very small numbers of gadwall and shoveler that use the lakes close to the proposed route, but that none of the affected lakes would be rendered unsuitable for the two species.

Appendix 4.1 to the AoS considered the various impacts that HS2 could have on the Colne Valley Gravel Pits during construction and operation, and the potential impact on the SW London Waterbodies SPA/Ramsar site. Impacts during construction were considered to be more significant than impacts during operation. In particular, noise and visual disturbance are likely to be greater during the construction phase than during the operational phase, when waterfowl are likely to habituate rapidly to trains. There are railways adjacent to a number of lakes in England where waterfowl take no notice of passing trains. The report concluded that the effects within the SSSI were unlikely to result in a significant effect on the SPA, but that this was not certain due to lack of information on numbers and movements of gadwall in the Thames valley, and therefore the relative importance of the population at the SSSI.

Now that more information is available on the distribution of gadwall and shoveler within the SSSI, it is concluded that the SSSI would easily be able to absorb the minor impacts on gadwall and shoveler that may occur as a result of HS2, and hence the numbers of these birds wintering within the Colne Valley Lakes complex would not be affected. The primary issue affecting numbers of these ducks appears to be availability of food at Stockers Lake and Broadwater Lake, neither of which would be significantly affected by HS2.

Since it is concluded that HS2 would not cause any overall impact on wintering gadwall and shoveler within the Colne Valley Lakes complex as a whole, there is no potential for significant impact on gadwall and shoveler wintering within the South West London Waterbodies SPA/Ramsar site.

Appendix 1: waterfowl counts

Lake number: 1 Savay Lake						
date	16.2.12		28.2.12		7.3.12	
time	11.30		15.00		17.25	
Gadwall	2					
Shoveler						
Mallard	16		4		8	
Wigeon						
Tufted Duck	17		29		15	
Pochard						
Goldeneye						
Goosander	1					
Smew						
Canada Goose	2					
Greylag Goose						
Mute Swan	2		2			
Coot	70		58		73	
Moorhen	1				1	
Great Crested Grebe			12		4	
Little Grebe						
Cormorant						
Grey Heron	1					
Lapwing						
Black-headed Gull	5					
Common Gull	1					
Lesser Black-back						
Greater Black-back						
Herring Gull						
Total waterfowl (excluding gulls)	112		105		91	

Comments:
16.2.12 – some ice on northern part of lake
28.2.12 – Great Crested Grebes partly in displaying pairs

Lake number: 2 Harefield No. 2 Lake						
date	16.2.12		28.2.12		7.3.12	
time	16.00		15.15		16.30	
Gadwall			2			
Shoveler			3			
Mallard			5		6	
Teal			2			
Wigeon						
Tufted Duck	27		27		25	
Pochard			1			
Goldeneye			1		1	
Goosander	2				1	
Smew						
Canada Goose			7		2	
Greylag Goose						
Mute Swan			2			
Coot	60		100		95	
Moorhen			6		4	
Great Crested Grebe	3		4		2	
Little Grebe			1			
Cormorant	1					
Grey Heron						
Lapwing						
Black-headed Gull	2				1	
Common Gull	1					
Lesser Black-back						
Greater Black-back						
Herring Gull						
Total waterfowl (excluding gulls)	93		161		136	

Lake number: 3 Korda Lake						
date	16.2.12		28.2.12		7.3.12	
time	11.45	16.30	11.30		12.30	
Gadwall						
Shoveler						
Mallard	8	8	5		6	
Wigeon						
Tufted Duck	32	32	19		7	
Pochard						
Goldeneye	2	3				
Goosander	1					
Smew						
Canada Goose			2			
Greylag Goose						
Mute Swan	2		2			
Coot	20	16	25		24	
Moorhen						
Great Crested Grebe	1	1	2		2 (pair)	
Little Grebe						
Cormorant						
Grey Heron						
Lapwing						
Black-headed Gull						
Common Gull						
Lesser Black-back						
Greater Black-back						
Herring Gull						
Total waterfowl (excluding gulls)	66	60	45		39	

Comments:
16.2.12 – ice on divided area on west side

Lake number: 4 'Long Lake'						
date	16.2.12		28.2.12		7.3.12	
time	12.00	17.00	11.40		12.45	
Gadwall						
Shoveler						
Mallard		2	3		1	
Wigeon						
Tufted Duck					2	
Pochard						
Goldeneye						
Goosander						
Smew						
Canada Goose						
Greylag Goose						
Mute Swan						
Coot	2	2	2		2	
Moorhen			1			
Great Crested Grebe						
Little Grebe						
Cormorant						
Grey Heron		1				
Lapwing						
Black-headed Gull						
Common Gull						
Lesser Black-back						
Greater Black-back						
Herring Gull						
Total waterfowl (excluding gulls)	2	5	6		5	

Lake number: 5 Harefield Moor Lake						
date	16.2.12		28.2.12		7.3.12	
time	12.00	16.45	11.45		13.00	
Gadwall					1	
Shoveler	1					
Mallard	2		3		1	
Teal					2	
Wigeon						
Tufted Duck	43	49	33		50	
Pochard						
Goldeneye						
Goosander						
Smew						
Canada Goose	2	6	4			
Greylag Goose						
Mute Swan			1		2	
Coot	2		8			
Moorhen			4		1	
Great Crested Grebe	2		4		2 (pair)	
Little Grebe						
Cormorant	5		4		5	
Grey Heron	1	1				
Lapwing		118				
Oystercatcher			2			
Black-headed Gull	75	40	61		62	
Common Gull	10	2	7		13	
Lesser Black-back					2	
Greater Black-back			1			
Herring Gull			2			
Total waterfowl (excluding gulls and waders)	58	56	61		64	

Comments:
16.2.12 – significant ice cover in north and west areas
At 16.45 Lapwings on east shore, where there is a shallow margin.

Lake number: 6 Broadwater						
date	16.2.12		28.2.12		7.3.12	
time	12.30	17.00	12.00		13.15	
Gadwall						
Shoveler	41	38	19		17	
Mallard			10		10	
Wigeon	35	Na				
Tufted Duck	62	Na	66		137	
Pochard	21	Na	5		20	
Goldeneye	3	Na	6		11	
Goosander						
Smew	2	Na				
Canada Goose	2	14	2			
Greylag Goose	2	Na				
Mute Swan	4	Na	2		6	
Coot	105	Na	111		150	
Moorhen					3	
Great Crested Grebe	1	Na	9		4 (2 prs)	
Little Grebe		1				
Black-necked Grebe			2			
Cormorant	15	25	39		27	
Grey Heron	1	Na	2		2	
Oystercatcher					2	
Lapwing	120					
Black-headed Gull	50	1,000 or more	160		45	
Common Gull			10		1	
Lesser Black-back	3		5			
Greater Black-back	1		3		1	
Herring Gull	90		70		9	
Total waterfowl (excluding gulls and waders)	293		273		391	

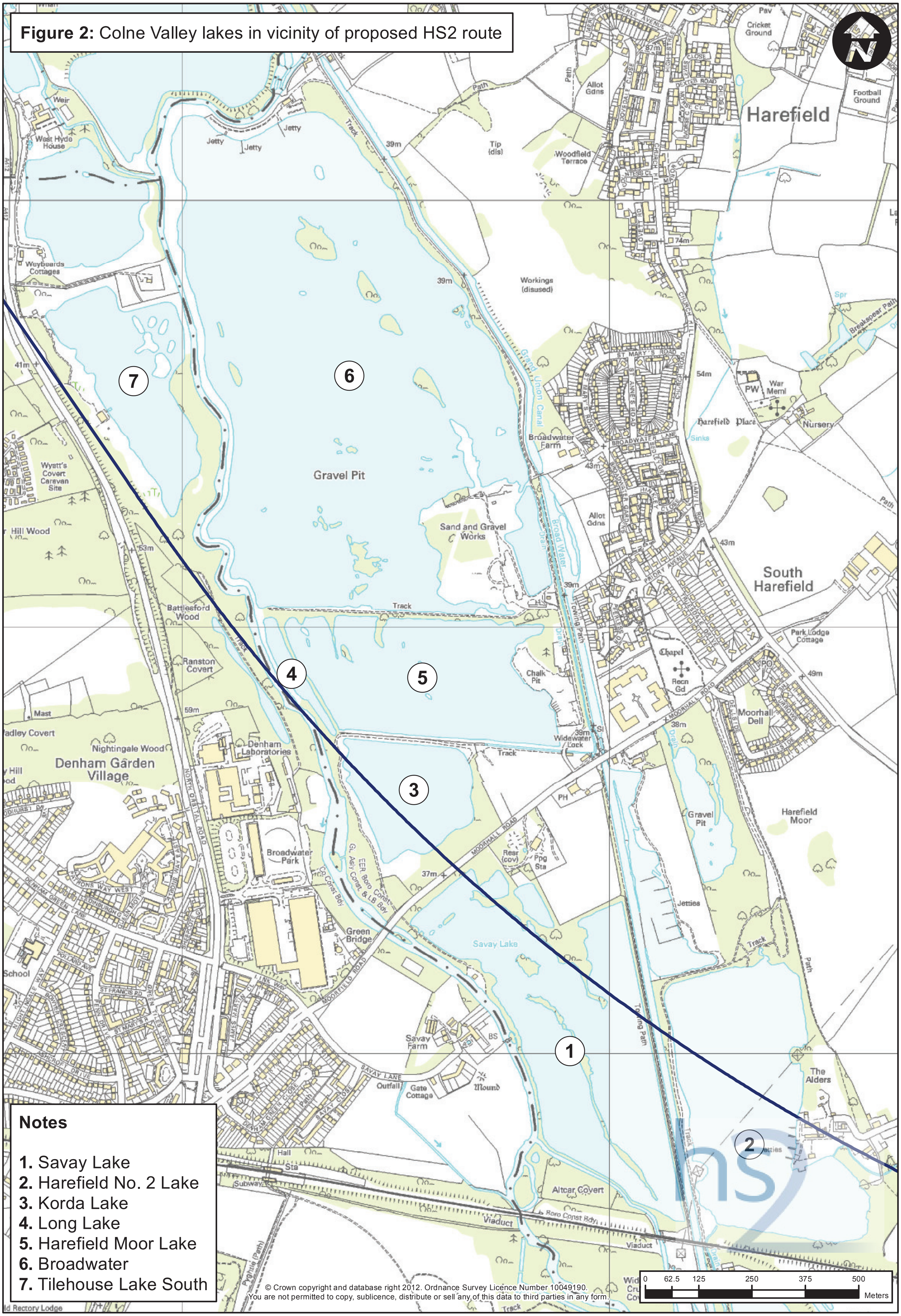
Comments:
16.2.12 – only changes noted for the later count.

28.2.12 – one heron nest and colony of cormorants nesting
Pair of summer plumage Black-necked Grebes

Lake number: 7 Tilehouse Lake South						
date	16.2.12		28.2.12		7.3.12	
time	15.30		14.30		15.25	
Gadwall	6		2		3	
Shoveler	3		3			
Mallard					2	
Wigeon						
Tufted Duck	10		22		36	
Pochard	2		3		6	
Goldeneye						
Goosander						
Smew						
Canada Goose						
Greylag Goose						
Mute Swan						
Coot	20		21		21	
Moorhen						
Great Crested Grebe						
Little Grebe					1	
Cormorant						
Grey Heron	1				1	
Lapwing						
Black-headed Gull			9		12	
Common Gull						
Lesser Black-back						
Greater Black-back						
Herring Gull						
Total waterfowl (excluding gulls)	42		51		70	

Figure 1: Colne Valley lakes in relation to SW London Waterbodies SPA

Figure 2: Colne Valley lakes in vicinity of proposed HS2 route



Notes

1. Savay Lake
2. Harefield No. 2 Lake
3. Korda Lake
4. Long Lake
5. Harefield Moor Lake
6. Broadwater
7. Tilehouse Lake South

APPENDIX 2
Response from Natural England 27th June 2012

Date: Wednesday, 27 June 2012
Our ref: [redacted]
Your ref:

[redacted]

[redacted]

Natural England
Consultation Service
Hornbeam House
Electra Way
Crewe Business Park
CREWE
CW1 6GJ

T: 0300 060 3900

[redacted]

High Speed 2. Colne Valley Gravel Pits: contribution to the assessment of the impact of HS2 LWM on the South West London Waterbodies SPA draft report

Thank you for consulting us about the draft report Colne Valley Gravel Pits: contribution to the assessment of the impact of HS2 LWM on the South West London Waterbodies SPA. This was received by Natural England 6th June 2012 asking for our comments on the report and its conclusion that there is no likely significant effect on the SW London Waterbodies SPA/Ramsar site.

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

General Comments on the Surveys

The surveys undertaken are acceptable in terms of their methodologies and approach, but the survey period chosen does not represent the full overwintering period. The survey effort is therefore disappointing in terms of the coverage of the season, with only the latter half of the wintering season surveyed. Comparison with, and incorporation of, other survey work at the Colne Valley Lakes is welcomed, but whilst it adds to the survey information, it should be noted that this is survey work is over five years old. The report does seek to demonstrate that the older but more comprehensive survey data is likely to still reflect the current levels and distribution of use by the birds, and notably it does seek to assess each of the lakes in terms of the habitat offered and likelihood of use. **Natural England therefore accepts the level of survey work to inform the Habitats Regulations Assessment (HRA)**. It is recognised that further survey work and refinement of ecological mitigation will take place before project finalisation and before implementation.

Habitats Regulations Assessment

In our response (14th July 2011) to the consultation "High Speed Rail: Investing in Britain's Future HS2 London to the West Midlands – Appraisal of Sustainability", Natural England advised that the conclusion of the Appraisal of Sustainability (AoS) that an Appropriate Assessment (AA) as part of the Habitats Regulations Assessment (HRA) is not necessary was not appropriate as a Likely Significant Effect could not be ruled out for the SW London Water Bodies SPA.

The HRA (Appendix 4 of the AoS 6.1.2) states that: "*an Appropriate Assessment (AA) is not necessary for any of the Natura 2000 sites considered potentially vulnerable to the proposed route or the main alternative"* and adds: "*further work would therefore be necessary to provide a robust assessment of the value of Broadwater Lake for the relevant wildfowl species".* At 6.1.8 (6.1.8 SW London Water-bodies SPA) the HRA notes that there may be an effect on gadwall populations *"further research would be required to establish the current size and importance of the population of gadwall at Colne Valley SSSI and likely adverse effects on the SPA arising from impacts on the SSSI"* .

Natural England advises that the surveys and the report satisfies the requirement for further research. **We also agree that the impact of operation of HS2 would have negligible impact** and not have a likely significant effect.

However, **Natural England does not agree that impact of construction would have no likely significant effect.** In order to conclude that a project proposal is not likely to have a significant effect upon European site interest features and their ability to meet their conservation objectives, and rule out the need for further detailed assessment; a project proposal needs to demonstrate that the measures necessary to ensure no likely significant effect are built into and secured within the project proposal. Observational information on disturbance responses during the survey work is welcomed. Whilst it is apparent that the two SPA bird species using the Colne Valley Lakes appear to habituate to regular low levels of repeated disturbance, the response to erratic, variable and high level disturbance from construction may have a completely different response, even at some distance.

Currently, Natural England advises that the proposal and the report does not provide enough information on the options for mitigating the impact of disturbance during construction to enable a conclusion of no likely significant effect to be drawn.

Therefore, we advise that the report, in seeking to demonstrate that the route will not adversely affect the South London Water Bodies SPA in terms of the supporting habitat used by the interest features at Colne Valley Lakes, should demonstrate that disturbance at construction can be minimised to the extent that the birds are not significantly disturbed. Whilst it is recognised that specific details cannot be presented at this stage, a suite of measures, including timing of works, predicted duration of works, measures to avoid sensitive times, measures to buffer/minimise noise, lighting and presence of plant and people, construction zones and protected buffer zone distances etc should be proposed in brief, having regard to the species in question and the successful application of measures elsewhere, where appropriate. Refinement of measures will take place later, but in order **to rule out the need for AA at this stage, the report needs to demonstrate that the impacts are capable of mitigation**, i.e. that there are suitable options to prevent disturbance impacts during construction.

In discussing the sensitivities of the two bird species, section 8 of the report states that "As with most other waterfowl, they also require access to lakes that are large enough to act as effective refuges when other lakes are disturbed." This point may be pertinent to the mitigation measures necessary to prevent disturbance impacts during the construction phase.

Site of Special Scientific Interest (SSSI) and Local Nature Reserve (LNR)

Please note that, out with of the HRA matters, there is still an issue with regard to protected species and areas along the proposed route, land take across the SSSI and LNR with potential for disturbance; critical would be the construction phase, if approved, though operation may have any impact – aside from noise which could be adapted to, there may be an issue with lighting also.

If I can provide any further advice relating to this consultation, please do not hesitate to contact me.

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[redacted]
[redacted]